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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/493,319	01/28/2000	Samson Huang	INTL-0312-US (P7995)	2102

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EXAMINER	
JORGENSEN, LELAND R	

ART UNIT	PAPER NUMBER
2675	14

DATE MAILED: 10/06/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No.	Applicant(s)	
	09/493,319	HUANG, SAMSON	
	Examiner	Art Unit	
	Leland R. Jorgensen	2675	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 September 2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *45 - 52* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *45 - 52* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. In view of preliminary amendment filed 8 September 2003, the rejections of claims 19 and 21 – 25 under 35 U.S.C. 112 are withdrawn.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 45 – 48 and 50 - 52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakajima, USPN 6,333,737 B1, in view of Nishida, USPN 6,297,787 B1.

Claims 45 and 50

Nakajima teaches a pixel 2 for a liquid crystal display. Nakajima, figures 1 and 2; col. 2, lines 44 – 47; and col. 3, lines 11 – 17. Nakajima teaches a memory 22 for each pixel. Nakajima, col. 3, lines 11 – 17; col. 6, lines 13 – 24; and figure 1a. Nakajima teaches a digital to analog conversion circuit 25. Nakajima, col. 3, lines 11 – 17; col. 6, lines 13 – 24; and figure 1. Although Nakajima does not specifically describe converting the digital indication into an analog voltage during a refresh operation, it is inherent to the operation of such a circuit that the information would be changed during a refresh operation. See Nakajima, col. 1, lines 13 – 19.

Nakajima does not teach that each memory is associated with a group of two or more of the pixel cells and that the memory is located closer to the associated group of pixel cells than another one of the group of pixel cells.

Nishida teaches an array of pixel cells having a memory 332 for each display element 333. Nishida, col. 6, lines 16 – 18; col. 12, lines 9 – 26; and figure 12. Nishida teaches that the memory cells are changed during a refresh operation. Nishida, col. 9, lines 10 – 45; col. 10, lines 18 – 43. Although Nishida teaches that each display element can be a pixel, Nishida, col. 6, lines 16 – 18, Nishida also teaches that each single display unit include a plurality of pixels. Nishida, col. 13, lines 43 – 60. Nishida, after giving an example of a display unit having sixteen sets of pixels with three lights each, states, "In such a configuration, it is still sufficient to provide single memory and single controller for the single display unit, since display information with respect to respective forty-eight light emitting diodes can be stored into the single memory." Nishida, col. 13, lines 56 – 60.

It would have been obvious to one of ordinary skill in the art at the time of the invention to provide memory to multiple pixels as taught by Nishida with the light modulator array as taught by Nakajima. Such combination would reduce components and costs without decreasing the advantages of the invention of Nakajima.

Claims 46

Nakajima teaches that the memory 22 is local to the pixel cell. Nakajima, col. 3, lines 11 – 17; col. 6, lines 13 – 24; and figure 1a. Nishida teaches that the memory is local to the pixel group. Nishida, col. 13, lines 43 – 60; and figure 12.

Claims 47 and 52

Nakajima teaches that the memory may be a RAM. Nakajima, col. 3, lines 57 – 59. Nishida teaches that the memory may be RAM. Nishida, col. 13, lines 21 – 26.

Claim 48

Nakajima teaches reading the digital indication from the memory. Nakajima, col. 3, line 66 – col. 4, line 4; and col. 5, lines 51 – 52. Nakajima does not specifically describe the reading during the refresh operation, but it is inherent to the operation of such a circuit that the information would be changed during a refresh operation. See Nakajima, col. 1, lines 13 – 19.

Claim 51

It is inherent to the operation of Nakajima that the refresh operation occurs at a different rate than the frame update operation. Nakajima specifically teaches,

> Further, if each pixel is provided with the output means for outputting data for displaying pixels (display data) on the basis of the processed data in addition to the operating means, the operational processing can be immediately performed on the data input to a pixel from the external or adjacent pixels to display the pixel concerned.

Nakajima, col. 2, lines 14 – 20. See also: Nakajima, col. 5, lines 17 – 26; col. 5, line 42 – col. 6, line 3.

4. Claim 49 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nakajima in view of Nishida as applied to claim 45 above, and further in view of Kinoshita et al, USPN 5,771,031.

Claims 49

As understood in the art, latching is holding data in a circuit until other circuits are ready to change the latch circuit. Nakajima does not specifically teach the step of latching the information from the memory.

Kinoshita teaches the step of latching the information from the memory while the data is updated. Kinoshita, col. 6, lines 39 – 42; col. 6, lines 63 – col. 7, line 6; col. 7, lines 14 – 21, lines 46 – 67; and col. 9, line 59 – col. 10, line 67.

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the latching method and circuit taught by Kinoshita the method as taught by Nakajima and Nishida. Like Nakajima, Kinoshita teaches a drive method for individual pixels of a flat panel display. Kinoshita, col. 1, lines 5 –8; and col. 3, lines 60 –65. Both Nakajima and Kinoshita teach many of the same parts including storage capacitors, CS, memory, and digital to analog converters. See e.g. Kinoshita, figures 1, 3 & 4; col. 4, lines 33 –36; col. 5, lines 64 – 66; col. 7, lines 14 – 21; and col. 8, lines 11 – 14. Both teach the need to individually drive each pixel array. Kinoshita, col. 1, line 10 – col. 2, line 37; and col. 2, lines 6 – 9. Kinoshita invites such combination by teaching,

> In the trend of resent years, the number of pixels in each horizontal pixel array is increased to improve the resolution of the active matrix LCD, and the word length of each pixel data is also increased to improve the precision of the gray scale. In order to increase the number of pixels and the word length, it is necessary for the signal line driving circuit to process the pixel data at a higher speed. However, if the processing speed of the signal line driving circuit is improved to its limit, it is difficult to drive all the signal lines within one horizontal scanning period.

Kinoshita, col. 1, lines 28 – 37. Kinoshita adds as the object of invention,

> An object of the present invention is to provide a flat-panel display device and a method of driving the same, which can maintain the memory capacity required for block-driving of each horizontal pixel array to be small.

Kinoshita, col. 2, lines 6 – 9. Kinoshita further adds,

> According to the aforementioned flat-panel display device and its driving method, pixel data items sequentially supplied from outside are divided into pixel-data blocks each consisting of the same number of pixel data items, equivalent to the number of pixels forming one pixel block. M pixel-data blocks are sequentially written in M memory sections, and the M pixel-data blocks stored in the M memory sections are read in parallel while writing is performed. These M pixel-data blocks are supplied to corresponding ones of the data supply buses. Therefore, the total memory capacity of the memory sections is smaller than a memory capacity required for storing all items of pixel data for one horizontal pixel array. Further, the memory capacity of the memory section is not significantly depend on the number of pixel data items for one horizontal array and the word length of pixel data. This enables an increase in the number of pixel data items for one horizontal pixel array and an increase in the word length while maintaining the memory capacity of the memory section to be small. As a result of this, it is possible to prevent costs for manufacturing a flat-panel display device from being increased due to block driving of the horizontal pixel array.

Kinoshita, col. 2, line 63 – col. 3, line 17. Kinoshita teaches that the memory can be reduced with its latching circuit. Kinoshita, col. 9, lines 59 – 67; and col. 10, lines 60 – 67.

Conclusion

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leland Jorgensen whose telephone number is 703-305-2650. The examiner can normally be reached on Monday through Friday, 7:00 a.m. through 3:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven J. Saras can be reached on 703-305-9720.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
Washington, D.C. 20231

or faxed to:

(703) 872-9314 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office, telephone number (703) 306-0377.

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STEVEN SARAS
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